PROJECT TITLE: Evaluation of barley under dryland fallow, dryland recrop, and irrigated conditions – 2013 (4W4145)

PROJECT LEADER:

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OBJECTIVE: To select the best adapted experimental lines for release and to determine the best adapted varieties of spring barley for eastern Montana.

MATERIALS AND METHODS:

Dryland:

Planted: May 6 Hailed out on August 10
Soil type: Williams clay loam
Previous crops: 2012- fallow, 2011 – safflower, 2010- small grain plots
Residual soil N to 3 ft: 72 lb N/ac
Residual soil P to 6 in: 31 ppm
Applied fertilizer: 40 lb N/ac as liquid 28-0-0
Herbicides: Brox M, 1.5 pt/ac and Axial 16 oz/ac, applied Jun 19

Recrop:

Planted: May 3 Hailed out on August 10
Soil type: Williams clay loam
Previous crops: 2012- green manured peas, 2011 – small grain plots, 2010- spring wheat
Residual soil N to 3 ft: 135 lb N/ac
Residual soil P to 6 in: 56 ppm
Applied fertilizer: None
Herbicides: Herbicides: Brox M, 1.5 pt/ac and Axial 16 oz/ac, applied Jun 19

Precipitation April – August, 2013: 17.75 in
Ave (64 yr) precipitation April – August: 9.36 in
Precipitation September 2012 – August 2013: 22.37 in
Ave (64 yr) precipitation September – August: 14.09 in

Comments: Conditions were wet at planting. May, June and August had much above average precipitation. A major hail storm severely damaged the crop on August10.

Irrigated:
Planted: May 1 Hailed out on August 10
Soil type: Savage silty clay
Previous crops: 2012 – safflower, 2011 – sugarbeet, 2010 – small grain
Applied fertilizer: 80 lb N/ac
Irrigated (sprinkler) on Jul 7, Jul 22, Aug 2, 1.8 inch each application
Herbicides: Herbicides: Brox M, 1.5 pt/ac and Axial 16 oz/ac, applied Jun 18

Precipitation April – August, 2013: 16.22 in
Ave (64 yr) precipitation April – August: 9.36 in
Precipitation September 2012 – August 2013: 20.93 in
Ave (64 yr) precipitation September – August: 14.09 in

Comments: Conditions were wet at planting. May, June and August had much above average precipitation. Hail storms did minor damage on August 5 and 6. A major hail storm severely damaged the crop on August10.

RESULTS:
Plots were severely damaged by hail on August 10, and were not harvested. Heading dates and heights are shown for the dryland site in Table 1, the recrop site in Table 2, and the irrigated site in Table 3.

SUMMARY: Barley yield trials are conducted under dryland fallow, dryland recrop, and irrigated conditions each year. All experiments reported under this project are of the replicated small plot type. These trials provide important information about performance of experimental lines and varieties from Montana, other states, and private companies. Regional barley producers make decisions on what varieties to grow based on data from these trials.

FUNDING SUMMARY: Expenditure information to be provided by OSP. No other grants support this project.

MWBC FY2014 GRANT SUBMISSION PLANS: It is planned to submit this project for funding consideration in the next fiscal year.

Table 1. Heading and height data obtained from an intrastate spring barley yield trial conducted under dryland fallow conditions at the Eastern Agricultural Research Center, Sidney, Montana.

entry	heading*	height, inches	entry	heading*	height, inches
MT090181	56.3	28.4	MT100126	56.7	29.5
MT100120	56.7	25.5	MT090186	56.3	26.8
MT100125	56.0	28.5	Vespa	55.7	22.6
MT110141	54.0	31.5	Craft	52.3	30.2
MT100060	54.7	29.5	Haxby	53.7	27.8
ME 05065-147	54.3	34.1	Pinnacle	53.7	23.7
ME 07005-007	54.7	27.1	MT110031	52.7	24.3
ME 07005-026	56.3	28.4	MT110061	55.7	26.5
MT110008	54.7	29.6	MT110139	54.3	29.4
MT070158	55.0	24.4	MT103005	57.3	28.4
MT110043	56.7	29.4	MT090180	55.7	29.8
Tradition	52.3	29.1	MT010160	54.7	29.0
Scarlett	56.0	27.8	Harrington	55.3	25.8
MT110113	51.3	28.3	Odyssey	57.0	22.6
MT100051	54.0	26.9	MT110092	51.0	24.8
MT110066	56.3	27.2	MT020155	52.0	27.2
MT090190	56.3	25.2	MT070125	55.3	28.6
MT080243	54.7	28.0	MT110016	56.0	28.6
MT090182	56.0	27.9	MT110065	57.0	31.8
MT110009	56.3	27.3	Prowashonupana	53.7	24.3
Eslick	55.7	24.3	Hockett	53.0	25.7
MT110097	51.7	28.7	MT070175	54.7	28.7
Champion	53.3	30.2	MT110095	51.0	31.4
MT100128	55.7	26.9	MT080281	54.0	24.3
ME 05050-045	54.3	24.0	MT110130	51.3	26.7
MT103022	55.0	25.6	MT100136	55.7	28.9
Conrad	55.0	26.1	ME 09064-005	52.7	28.2
MT100130	55.3	29.9	Overture	57.3	24.8
MT090184	55.3	29.1	MT100132	56.3	29.5
MT100124	56.0	25.7	MT070161	54.0	23.8
Genie	57.3	22.4	average	54.9	27.3
MT090193	56.3	28.1	probability	<0.001	<0.001
18-20	57.3	23.4	CV (S/MEAN)	1.7	10.5
MT110109	56.3	27.0	LSD (0.05)	1.5	4.6

* days from planting

Table 1. Heading and height data obtained from a barley yield trial conducted under dryland recrop conditions at the Eastern Agricultural Research Center, Sidney, Montana.

entry	heading*	height, inches
MT090190	60.0	23.2
MT090180	58.7	26.9
Haxby	56.0	21.7
Tradition	58.0	23.7
Conrad	56.3	23.9
Harrington	58.3	23.1
MT080279	55.3	24.9
MT070158	55.0	26.3
Geraldine	57.7	22.9
Eslick	58.0	20.2
Gallatin	57.0	23.5
Metcalfe	55.0	25.4
MT070159	58.3	19.8
Champion	58.7	20.0
Cowboy	58.0	19.9
Hockett	57.7	21.5
average	57.4	22.9
probability	0.026	<0.001
CV (S/MEAN)	2.9	7.9
LSD (0.05)	2.8	3.0

* days from planting

Table 3. Heading and height data obtained from an intrastate spring barley yield trial conducted under sprinkler irrigated conditions at the Eastern Agricultural Research Center, Sidney, Montana.

entry	heading*	height, inches	entry	heading*	height, inches
Conrad	54.3	26.9	Scarlett	54.7	28.6
MT110065	56.3	31.0	MT110095	47.7	30.3
MT100130	54.7	31.2	MT100125	54.0	31.4
ME 05065-147	51.7	35.2	MT090193	54.3	31.4
MT110141	51.7	28.8	Craft	51.0	32.2
Overture	57.0	26.8	MT110009	57.7	34.1
MT110043	57.3	31.4	MT100124	54.7	31.6
MT090182	54.7	31.2	MT090181	54.0	32.2
Genie	56.3	25.7	MT070125	54.3	30.3
MT020155	48.7	28.8	ME 05064-005	50.0	28.8
MT090180	52.7	30.7	MT110066	54.3	27.8
MT110109	57.0	31.2	Vespa	54.0	26.3
MT110113	48.7	29.2	MT110031	48.7	26.3
ME 05050-045	50.0	27.9	ME 07005-026	53.7	28.1
Harrington	53.0	33.0	Odyssey	57.7	28.5
MT100132	54.3	31.5	MT090184	55.7	31.1
MT110016	54.3	31.0	MT100120	54.3	33.4
MT103022	51.7	27.6	MT100126	56.3	32.2
MT110139	51.7	34.8	MT110092	47.0	28.6
MT100060	50.3	26.7	Prowashonupana	49.7	27.6
MT103005	57.7	28.7	MT110008	54.3	31.0
MT090190	55.7	30.6	MT070161	49.7	27.7
MT070175	52.7	30.8	Pinnacle	49.7	28.7
MT080281	50.7	26.9	Tradition	49.3	29.4
Eslick	53.3	26.0	ME 07005-007	52.3	29.6
MT090186	54.3	31.5	MT080243	52.3	31.5
MT110061	54.7	28.2	MT100136	52.7	30.7
MT110130	48.7	31.9	MT070158	49.3	30.2
Haxby	51.0	28.6	MT110097	48.7	27.2
MT100051	50.7	28.1	Champion	52.0	31.0
MT100128	54.7	31.4	average	52.9	29.9
Hockett	50.3	31.6	probability	<0.001	<0.001
MT010160	52.0	31.5	CV (S/MEAN)	2.3	4.5
18-20	57.3	27.7	LSD (0.05)	2.0	2.2

* days from planting